

Table 2. Apatite fission track length and kinetic parameter data, East MacKay I-77 sample.

¹ Track No.	² Auto-scan No.	Confined length (μm)	Angle to C-axis (degrees)	³ Meas. Dpar (μm)	⁴ Corr. Dpar (μm)	⁵ Meas. CI (apfu)	⁶ Calc. OH (apfu)	⁷ r _{mro}	⁸ Calc. Dpar (μm)	⁸ Calc. CI (apfu)	Comments
kinetic population #1 (<0.125 apfu CI)											
1	5	11.20	83.71	1.66	1.75	0.0001	0.3259	0.8303	1.84	0.0287	age mt #1
2	5	12.16	77.54	1.66	1.75	0.0001	0.3259	0.8303	1.84	0.0287	age mt #1
3	27	11.74	76.73	2.17	2.28	0.0016	0.6436	0.8346	1.80	0.0164	Cf mt #2
4	22	4.54	83.63	1.34	1.41	0.0042	0.0000	0.8159	1.97	0.0673	Cf mt #2
5	19	9.88	87.41	1.95	2.05	0.0055	0.0000	0.8490	1.66	-0.0268	Cf mt #2
6	59	10.38	67.56	1.43	1.50	0.0060	0.3040	0.8221	1.92	0.0510	Cf mt #2
7	43	11.31	53.16	1.94	2.04	0.0082	0.1843	0.8509	1.64	-0.0329	Cf mt #2
8	8	9.67	32.86	1.51	1.59	0.0090	0.0000	0.8577	1.57	-0.0551	Cf mt #2
9	8	9.85	37.21	1.51	1.59	0.0090	0.0000	0.8577	1.57	-0.0551	Cf mt #2
10	55	10.53	42.82	1.71	1.80	0.0113	0.1874	0.8297	1.85	0.0303	Cf mt #2
11	14	9.53	41.34	1.58	1.66	0.0113	0.4128	0.8018	2.08	0.1023	Cf mt #1
12	56	10.79	16.15	1.50	1.57	0.0144	0.0000	0.8466	1.69	-0.0195	Cf mt #2
13	26	8.77	66.06	1.16	1.21	0.0147	0.0000	0.8229	1.91	0.0488	Cf mt #1
14	8	9.85	67.28	1.87	1.96	0.0153	0.4980	0.7976	2.12	0.1123	age mt #2
15	34	10.40	69.73	2.08	2.18	0.0160	0.0000	0.8088	2.03	0.0853	age mt #3
16	34	10.90	43.50	2.08	2.18	0.0160	0.0000	0.8088	2.03	0.0853	age mt #3
17	35	13.07	17.68	1.99	2.09	0.0277	0.3580	0.8196	1.94	0.0575	age mt #3
18	6	12.67	62.22	1.15	1.21	0.0310	0.0000	0.8254	1.89	0.0422	age mt #3
19	29	12.20	69.45	1.65	1.74	0.0319	0.3911	0.7967	2.12	0.1143	Cf mt #2
20	16	11.45	83.36	1.79	1.89	0.0322	0.4366	0.8267	1.88	0.0385	Cf mt #2
21	11	11.12	76.79	1.42	1.49	0.0341	0.3064	0.7782	2.26	0.1556	Cf mt #1
22	22	7.53	49.64	1.57	1.65	0.0391	0.4088	0.8260	1.88	0.0405	Cf mt #1
23	12	11.26	69.37	1.59	1.67	0.0392	0.3122	0.8095	2.02	0.0834	age mt #2
24	15	13.72	77.62	2.70	2.84	0.0395	0.7025	0.7811	2.24	0.1495	Cf mt #2
25	21	14.62	22.31	1.33	1.40	0.0404	0.1119	0.8246	1.89	0.0444	Cf mt #2
26	14	10.29	9.55	1.67	1.76	0.0407	0.7568	0.7944	2.14	0.1198	age mt #2
27	40	12.40	32.47	1.59	1.67	0.0421	0.3850	0.8266	1.88	0.0389	Cf mt #2
28	26	10.64	69.40	1.88	1.98	0.0424	0.4388	0.8186	1.95	0.0601	age mt #3
29	24	14.73	25.68	1.55	1.63	0.0435	0.0000	0.7985	2.11	0.1102	Cf mt #1
30	39	11.04	44.94	1.61	1.70	0.0466	0.4489	0.8168	1.96	0.0648	age mt #3
31	39	10.88	71.60	1.61	1.70	0.0466	0.4489	0.8168	1.96	0.0648	age mt #3
32	2	13.67	35.39	1.29	1.35	0.0504	0.0522	0.7952	2.13	0.1179	Cf mt #1
33	13	11.37	46.67	1.59	1.67	0.0538	0.7599	0.8032	2.07	0.0990	age mt #3
34	11	12.74	70.46	1.59	1.67	0.0568	0.1412	0.8261	1.88	0.0403	Cf mt #2
35	14	10.09	25.35	1.79	1.88	0.0591	0.0677	0.7509	2.44	0.2108	Cf mt #2
36	6	12.67	73.52	2.05	2.15	0.0652	0.8783	0.7275	2.58	0.2534	age mt #1
37	9	8.74	69.59	1.04	1.09	0.0666	0.6112	0.7968	2.12	0.1140	age mt #2
38	15	12.68	76.21	1.69	1.77	0.0683	0.1548	0.8055	2.05	0.0933	Cf mt #1
39	42	11.84	41.07	1.48	1.55	0.0716	0.5823	0.7964	2.12	0.1151	Cf mt #2
40	10	10.30	53.81	2.02	2.13	0.0727	0.6027	0.7244	2.59	0.2587	Cf mt #1
41	1	12.38	55.42	1.51	1.59	0.0731	0.0000	0.8119	2.00	0.0774	Cf mt #2
42	1	8.27	44.63	1.51	1.59	0.0731	0.0000	0.8119	2.00	0.0774	Cf mt #2
43	44	10.87	15.46	1.60	1.68	0.0754	0.4222	0.7678	2.33	0.1774	Cf mt #2
44	47	9.08	41.55	1.75	1.84	0.0797	0.6641	0.8176	1.95	0.0629	Cf mt #2
45	1	10.58	74.00	1.84	1.94	0.0804	1.0591	0.7346	2.53	0.2409	age mt #2
46	36	9.36	26.73	2.01	2.11	0.0822	0.3775	0.8163	1.97	0.0663	Cf mt #2
47	36	11.14	82.92	2.01	2.11	0.0822	0.3775	0.8163	1.97	0.0663	Cf mt #2
48	36	7.90	14.50	2.01	2.11	0.0822	0.3775	0.8163	1.97	0.0663	Cf mt #2

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49	18	12.72	48.94	1.96	2.06	0.0850	0.8199	0.7282	2.57	0.2521	Cf mt #1
50	12	7.44	50.86	2.11	2.21	0.0866	0.7147	0.8066	2.04	0.0906	Cf mt #1
51	50	13.09	68.79	2.63	2.77	0.0884	0.9192	0.7198	2.62	0.2666	age mt #3
52	5	12.30	53.16	1.62	1.70	0.0979	0.2487	0.7614	2.37	0.1904	age mt #3
53	17	7.95	33.94	1.77	1.86	0.0981	0.1409	0.7529	2.42	0.2070	Cf mt #1
54	45	9.29	61.00	2.00	2.10	0.0993	0.0000	0.8113	2.01	0.0789	Cf mt #2
55	45	9.00	54.96	2.00	2.10	0.0993	0.0000	0.8113	2.01	0.0789	Cf mt #2
56	3	11.97	12.45	1.61	1.70	0.1118	0.7408	0.7089	2.68	0.2848	age mt #2
57	3	13.54	40.04	1.61	1.70	0.1118	0.7408	0.7089	2.68	0.2848	age mt #2
58	3	11.12	25.35	1.79	1.89	0.1167	0.9129	0.7080	2.68	0.2863	age mt #1
59	5	9.55	37.23	1.93	2.03	0.1216	0.8839	0.7488	2.45	0.2148	age mt #2
60	5	3.06	60.67	1.93	2.03	0.1216	0.8839	0.7488	2.45	0.2148	age mt #2
		10.73		1.73	1.82	0.053			2.09	0.104	mean
		2.14		0.31	0.33	0.035			0.28	0.087	stand. dev.
kinetic population #2 (>0.125 apfu CI)											
61	37	10.62	69.94	2.18	2.29	0.1361	0.6033	0.7612	2.37	0.1908	age mt #3
62	37	11.82	53.24	2.18	2.29	0.1361	0.6033	0.7612	2.37	0.1908	age mt #3
63	3	12.88	75.78	2.01	2.12	0.1366	0.5746	0.7391	2.51	0.2327	age mt #3
64	3	9.10	52.52	2.01	2.12	0.1366	0.5746	0.7391	2.51	0.2327	age mt #3
65	35	6.61	59.65	1.81	1.90	0.1404	0.0000	0.7304	2.56	0.2483	Cf mt #2
66	18	11.81	10.88	1.49	1.57	0.1426	0.0000	0.7639	2.35	0.1853	Cf mt #2
67	16	10.95	19.05	1.84	1.93	0.1524	0.0000	0.7710	2.31	0.1708	Cf mt #1
68	6	12.04	64.40	1.58	1.66	0.1529	0.9885	0.7548	2.41	0.2032	age mt #2
69	48	10.09	76.79	1.99	2.09	0.1549	0.5122	0.7852	2.21	0.1404	age mt #3
70	48	9.54	31.84	1.99	2.09	0.1549	0.5122	0.7852	2.21	0.1404	age mt #3
71	48	6.56	64.82	1.99	2.09	0.1549	0.5122	0.7852	2.21	0.1404	age mt #3
72	62	9.89	36.44	1.89	1.99	0.1639	0.5116	0.7940	2.14	0.1206	Cf mt #2
73	53	7.79	79.23	1.97	2.07	0.1697	0.0000	0.7442	2.48	0.2233	Cf mt #2
74	19	6.66	54.24	1.98	2.08	0.1709	0.5416	0.7978	2.11	0.1118	Cf mt #1
75	61	11.77	26.65	2.25	2.36	0.1731	0.7711	0.7657	2.34	0.1816	Cf mt #2
76	61	9.65	79.92	2.25	2.36	0.1731	0.7711	0.7657	2.34	0.1816	Cf mt #2
77	61	7.72	70.75	2.25	2.36	0.1731	0.7711	0.7657	2.34	0.1816	Cf mt #2
78	61	4.18	38.25	2.25	2.36	0.1731	0.7711	0.7657	2.34	0.1816	Cf mt #2
79	28	9.95	38.52	1.81	1.91	0.1762	0.6342	0.7754	2.28	0.1617	Cf mt #2
80	1	7.35	78.12	2.64	2.78	0.1772	0.6684	0.7189	2.62	0.2681	Cf mt #1
81	1	9.89	86.26	2.64	2.78	0.1772	0.6684	0.7189	2.62	0.2681	Cf mt #1
82	1	9.27	80.07	2.64	2.78	0.1772	0.6684	0.7189	2.62	0.2681	Cf mt #1
83	1	9.40	56.66	2.64	2.78	0.1772	0.6684	0.7189	2.62	0.2681	Cf mt #1
84	1	9.47	10.87	2.64	2.78	0.1772	0.6684	0.7189	2.62	0.2681	Cf mt #1
85	21	9.43	38.97	2.05	2.15	0.1778	0.2949	0.7907	2.17	0.1281	Cf mt #1
86	60	13.29	18.74	1.99	2.09	0.178	0.4930	0.7405	2.50	0.2302	Cf mt #2
87	11	10.19	28.54	1.78	1.87	0.1794	0.8945	0.7376	2.52	0.2355	age mt #2
88	26	13.16	35.43	2.60	2.74	0.1796	0.2985	0.7801	2.24	0.1517	Cf mt #2
89	12	12.69	58.60	1.92	2.01	0.1804	0.8998	0.6802	2.82	0.3293	age mt #1
90	12	10.98	12.50	1.92	2.01	0.1804	0.8998	0.6802	2.82	0.3293	age mt #1
91	12	12.24	73.02	1.92	2.01	0.1804	0.8998	0.6802	2.82	0.3293	age mt #1
92	12	11.70	62.28	1.92	2.01	0.1804	0.8998	0.6802	2.82	0.3293	age mt #1
93	37	8.62	61.80	1.69	1.77	0.1805	0.0000	0.7945	2.14	0.1195	Cf mt #2
94	37	10.28	56.31	1.69	1.77	0.1805	0.0000	0.7945	2.14	0.1195	Cf mt #2
95	37	8.97	73.63	1.69	1.77	0.1805	0.0000	0.7945	2.14	0.1195	Cf mt #2
96	30	11.12	13.93	1.84	1.93	0.1812	0.4913	0.7703	2.31	0.1723	Cf mt #2

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97	9	11.66	29.43	1.89	1.99	0.1826	0.0805	0.7452	2.47	0.2216	Cf mt #2
98	4	11.33	75.83	2.15	2.26	0.1837	0.5539	0.7462	2.47	0.2197	Cf mt #2
99	41	12.52	52.06	2.46	2.59	0.1841	0.7230	0.7060	2.69	0.2895	Cf mt #2
100	41	10.73	57.60	2.46	2.59	0.1841	0.7230	0.7060	2.69	0.2895	Cf mt #2
101	41	11.74	79.03	2.46	2.59	0.1841	0.7230	0.7060	2.69	0.2895	Cf mt #2
102	41	11.93	87.88	2.46	2.59	0.1841	0.7230	0.7060	2.69	0.2895	Cf mt #2
103	41	11.11	29.06	2.46	2.59	0.1841	0.7230	0.7060	2.69	0.2895	Cf mt #2
104	41	12.88	55.86	2.46	2.59	0.1841	0.7230	0.7060	2.69	0.2895	Cf mt #2
105	33	11.61	71.39	2.09	2.19	0.1887	0.6905	0.7049	2.70	0.2912	Cf mt #2
106	33	11.12	70.20	2.09	2.19	0.1887	0.6905	0.7049	2.70	0.2912	Cf mt #2
107	39	7.09	69.77	2.43	2.55	0.1932	0.8355	0.6050	3.15	0.4296	Cf mt #2
108	39	9.93	77.57	2.43	2.55	0.1932	0.8355	0.6050	3.15	0.4296	Cf mt #2
109	13	13.92	53.97	2.95	3.11	0.1936	1.5580	0.6862	2.79	0.3204	age mt #2
110	13	14.09	78.51	2.95	3.11	0.1936	1.5580	0.6862	2.79	0.3204	age mt #2
111	48	9.90	73.99	2.00	2.10	0.1947	0.2889	0.7737	2.29	0.1652	Cf mt #2
112	58	12.82	64.90	2.18	2.29	0.1974	0.4605	0.7497	2.44	0.2130	Cf mt #2
113	38	8.58	84.92	1.63	1.72	0.1975	0.4578	0.7463	2.46	0.2194	Cf mt #2
114	38	10.33	45.73	1.63	1.72	0.1975	0.4578	0.7463	2.46	0.2194	Cf mt #2
115	38	8.18	66.47	1.63	1.72	0.1975	0.4578	0.7463	2.46	0.2194	Cf mt #2
116	13	9.01	60.69	1.66	1.75	0.2074	0.5115	0.7450	2.47	0.2218	Cf mt #2
117	9	9.99	76.68	2.39	2.51	0.2088	0.8512	0.7119	2.66	0.2798	age mt #1
118	9	9.13	77.54	2.39	2.51	0.2088	0.8512	0.7119	2.66	0.2798	age mt #1
119	6	10.04	84.43	1.94	2.04	0.2092	0.5254	0.7376	2.52	0.2354	Cf mt #1
120	31	7.47	67.99	1.87	1.96	0.2097	0.4266	0.7041	2.70	0.2925	Cf mt #2
121	20	11.78	32.13	2.71	2.84	0.2193	0.7130	0.7010	2.72	0.2974	Cf mt #1
122	13	8.73	83.81	2.15	2.26	0.2243	0.1201	0.7560	2.40	0.2010	Cf mt #1
123	13	4.03	60.94	2.15	2.26	0.2243	0.1201	0.7560	2.40	0.2010	Cf mt #1
124	13	7.67	43.84	2.15	2.26	0.2243	0.1201	0.7560	2.40	0.2010	Cf mt #1
125	20	10.06	62.31	1.58	1.66	0.2384	0.0000	0.7683	2.32	0.1764	Cf mt #2
126	5	9.59	50.12	2.09	2.20	0.2414	0.5728	0.7228	2.60	0.2615	Cf mt #2
127	23	12.63	41.20	1.75	1.84	0.2489	0.2232	0.7671	2.33	0.1788	Cf mt #2
128	23	6.37	87.89	1.75	1.84	0.2489	0.2232	0.7671	2.33	0.1788	Cf mt #2
129	2	14.05	81.85	2.62	2.75	0.25	0.7731	0.6700	2.87	0.3443	Cf mt #2
130	25	7.53	54.64	2.27	2.38	0.2559	0.6874	0.7488	2.45	0.2147	Cf mt #2
131	57	12.82	72.39	1.95	2.05	0.2599	0.1535	0.7938	2.14	0.1212	Cf mt #2
132	49	7.83	78.15	2.28	2.40	0.2619	0.8502	0.7204	2.62	0.2656	age mt #3
133	49	10.59	39.61	2.28	2.40	0.2619	0.8502	0.7204	2.62	0.2656	age mt #3
134	49	12.19	68.40	2.28	2.40	0.2619	0.8502	0.7204	2.62	0.2656	age mt #3
135	49	10.20	64.74	2.28	2.40	0.2619	0.8502	0.7204	2.62	0.2656	age mt #3
136	9	10.08	26.25	2.52	2.65	0.2719	0.3739	0.7370	2.52	0.2365	Cf mt #1
137	9	11.64	39.64	2.52	2.65	0.2719	0.3739	0.7370	2.52	0.2365	Cf mt #1
138	34	10.87	54.76	2.72	2.86	0.2889	0.7926	0.6976	2.74	0.3028	Cf mt #2
139	34	14.83	41.60	2.72	2.86	0.2889	0.7926	0.6976	2.74	0.3028	Cf mt #2
140	34	10.76	81.27	2.72	2.86	0.2889	0.7926	0.6976	2.74	0.3028	Cf mt #2
141	25	7.96	43.20	1.67	1.76	0.2979	0.3190	0.7595	2.38	0.1942	age mt #3
142	46	11.11	77.04	2.43	2.55	0.3043	0.4819	0.7113	2.66	0.2808	Cf mt #2
143	23	10.86	65.22	2.73	2.87	0.3072	0.6085	0.6867	2.79	0.3196	Cf mt #1
144	23	10.27	70.68	2.73	2.87	0.3072	0.6085	0.6867	2.79	0.3196	Cf mt #1
145	50	9.72	61.36	1.91	2.01	0.3073	0.2178	0.7343	2.54	0.2415	Cf mt #2
146	50	9.36	62.52	1.91	2.01	0.3073	0.2178	0.7343	2.54	0.2415	Cf mt #2
147	50	11.77	61.92	1.91	2.01	0.3073	0.2178	0.7343	2.54	0.2415	Cf mt #2

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148	50	9.47	59.64	1.91	2.01	0.3073	0.2178	0.7343	2.54	0.2415	Cf mt #2
149	5	11.77	59.98	2.58	2.71	0.3189	0.5439	0.7063	2.69	0.2890	Cf mt #1
150	10	9.97	66.56	2.27	2.39	0.3331	0.7737	0.7220	2.61	0.2629	age mt #2
151	3	11.45	66.93	2.77	2.91	0.3427	0.6995	0.6544	2.94	0.3662	Cf mt #1
152	17	10.26	65.23	2.88	3.02	0.3564	0.7336	0.6128	3.12	0.4201	Cf mt #2
153	25	10.19	56.80	2.29	2.40	0.3598	0.5640	0.7230	2.60	0.2611	Cf mt #1
154	8	10.17	2.65	1.93	2.03	0.3622	0.3793	0.7439	2.48	0.2240	Cf mt #1
155	54	10.48	57.28	2.77	2.91	0.3778	0.5652	0.6978	2.73	0.3024	Cf mt #2
156	49	12.05	19.43	2.75	2.89	0.383	0.1976	0.7470	2.46	0.2181	Cf mt #2
157	49	11.84	35.13	2.75	2.89	0.383	0.1976	0.7470	2.46	0.2181	Cf mt #2
158	7	10.81	56.45	1.98	2.08	0.3935	0.5540	0.6909	2.77	0.3132	age mt #2
159	7	11.04	52.46	1.98	2.08	0.3935	0.5540	0.6909	2.77	0.3132	age mt #2
160	24	9.26	74.38	2.58	2.72	0.4226	0.5848	0.5872	3.22	0.4505	Cf mt #2
161	4	10.81	84.82	2.45	2.57	0.4285	0.4284	0.5910	3.20	0.4461	Cf mt #1
162	7	10.60	72.45	2.55	2.68	0.4657	0.0000	0.6552	2.94	0.3651	Cf mt #1
163	7	11.30	82.95	2.55	2.68	0.4657	0.0000	0.6552	2.94	0.3651	Cf mt #1
164	12	9.67	52.63	3.00	3.15	0.468	0.6348	0.6467	2.98	0.3767	Cf mt #2
165	12	8.69	68.54	3.00	3.15	0.468	0.6348	0.6467	2.98	0.3767	Cf mt #2
166	29	12.22	38.62	2.73	2.87	0.4862	0.8291	0.6209	3.09	0.4101	age mt #3
167	51	11.01	85.75	2.38	2.50	0.5409	0.8196	0.6592	2.92	0.3595	Cf mt #2
168	20	13.92	54.16	3.02	3.18	0.5877	0.7122	0.4670	3.61	0.5718	age mt #3
169	20	12.48	8.05	3.02	3.18	0.5877	0.7122	0.4670	3.61	0.5718	age mt #3
170	32	13.15	86.20	2.74	2.88	0.6267	0.8030	0.5128	3.47	0.5292	age mt #3
171	32	12.96	35.55	2.74	2.88	0.6267	0.8030	0.5128	3.47	0.5292	age mt #3
		10.41		2.25	2.36	0.256			2.61	0.265	mean
		1.99		0.39	0.41	0.113			0.31	0.094	stand. dev.
172	4	12.13	52.26	1.48	1.55	-	-	-	-	-	age mt #2
173	3	10.79	59.74	1.84	1.94	-	-	-	-	-	Cf mt #2
174	52	13.51	50.72	1.32	1.39	-	-	-	-	-	Cf mt #2

¹All track length measurements by A. Grist

²Autoscan number used for locating grains for microprobe measurements

³Average etch figure size parallel to c-axis measured by A. Grist (1.74 μm for Durango apatite)

⁴Corrected by reference to Carlson *et al.* (1999) Durango apatite Dpar value (1.83 μm)

⁵Measured CI content from microprobe data of Table 3b

⁶OH concentration calculated using microprobe data (Table 3)

⁷Kinetic parameter calculated using full probe data (Table 3b) in equation 6 of Carlson *et al.* (1999)

⁸Calculated using r_{mro} value and equations 4a,b of Ketcham *et al.* (2000)